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WINTER COLLECTING IN FLORIDA.

BY ANNIE TRUMBULL SLOSSON.

I reached Florida this year on January 25th. Butterflies were flying at that season in Jacksonville, and I saw from my window *Callidryas eubule*, *Terias delia*, *Limenitis disippus*, *Danais archippus*, and some of the Hesperidæ. At night, though the weather was cool, *Agrotis incivis* and *A. malefida* came to the piazza lights by the dozen. On the 27th, at Sanford, about one hundred and twenty-five miles farther south, several moths came to the rather dimly-lighted windows, among them the Southern form of *Hyperchiria io*, Dr. Strecker's *lilith*—*Eudioptis hyalinata* and *Agrotis incivis*. On the 28th we went to Punta Gorda (Charlotte Harbor) and remained there until March. There had been no rain there for some four or five months, consequently vegetation was backward, and there were very few flowers, but insects were plentiful. During the first few days after my arrival I saw *P. cresphontes*, *P. palamedes*, *P. ajax*, *P. troilus*, *P. turnus*, *D. archippus*, *L. disippus*, *L. eros*, *Pieris monuste*, *Agraulis vanillæ*, *Terias delia*, *T. lisa*, *Callidryas eubule* and *Junonia cœnia*, besides numerous Hesperidæ. A few days later, about

the few orange blossoms which opened in spite of the drought, we found beautiful specimens of *Erycides batabano*. They fluttered about the fragrant flowers like humming birds, their wings glancing in the sunlight with touches of sapphire and emerald. With them, and sipping from the same blossoms, we took three specimens of an *Alypia* new to me, and which I cannot place till I have access to my books. Along the shore, just inside the thicket of mangroves, are long flat stretches of sand, often submerged and always wet. On these grow little but samphire (*Salicornia ambigua*) *Iresine vermicularis* and such marine plants with fleshy, succulent leaves and insignificant flowers. But over these in the hot sunshine at midday were always flitting tiny *Lycænas* and *Theclas*. Here I took the little bronzy *L. isophthalma*, *L. filenus*, *L. theonus* (a lovely little species, the female with wings almost white), *Thecla pœas*, *T. M-album* and *T. melinus* (this last name is given me by Dr. Henry Skinner). There were so very few blossoms that I knew nearly every plant which bloomed, and could visit each one as I made my collecting rounds. One large thistle (*C. horridulum*) with several heads of pale yellow flowers was always a favorite spot for insects, and wherever a plant of the ugly fireweed (*Erechthites*) lifted its greenish, commonplace heads of flowers they were surrounded by little gay-winged lovers. Seeing at a distance one day what looked like a patch of large white blossoms I went towards it only to find a mat of the little creeping hyssop (*Herpestis monniera*) with tiny lavender flowers covered with the Southern cabbage butterfly (*P. monuste*). There were at least twenty on a patch not two feet square. Hesperidæ abounded, skipping jerkily about the grounds of the hotel and over the palmetto scrub; *Pamphila brettus*, *P. fusca*, *P. phylæus* (Dr. Skinner gives me these names), *P. arpa*, *P. maculata* and several others yet unnamed. *Calephelis cænius* was also abundant. The evenings were generally windy and cool, not favorable conditions for moth hunting, but we met with comparative success. At light we captured many fine specimens, some still unidentified. Here we took *Hyparpax auricinctus* (I think that this is the name given last year by Mr. Graef, but I have no book for reference), *Varina ornata* Neumoegen, *Litoprosopus futilis* G. & R., *Byssodes obrussata* Gr., *Lepiodes scolopacinaria* Guen., *Dilophonota obscura* Fab., *Ellema coniferarum* A. & S., *Lagoa pyxidifera* A. & S., *Platœceticus gloveri* Pack.,

Trama hinna Gey., *Phurys vinculum* Guen., *Euhalisidota longa* Gr. and many other species. The true collector is always sanguine, and I have great hopes concerning my unnamed specimens. One large, oddly-marked sphinx fills me with visions of a new genus as well as species, and I have already selected its name. There is also a strange and beautiful moth, apparently one of the Zygænidæ, unlike anything I have seen or of which I have read. I found feeding upon the tomato vines in the hotel garden many larvæ of *Phlegethontius celeus*, and upon the sweet potato and *Ipomœa pes-capræ*, larvæ of *P. cingulata*. These were all full grown; I placed several of them with their food-plant in a box of earth where they soon buried themselves and transformed, but though they have been in the pupa state nearly five weeks no moth has yet emerged. I also found feeding upon mangrove (*Rhizophora mangle*) and upon *Conocarpus erecta* young larvæ of *Hyperchiria io* Fab. I have reared them and they are just spinning themselves up among some leaves. They do not differ in any respect, as far as I can see, from the typical form, and I am anxious to see if they will develop into var. *lilith* Strecker.

(To be continued.)

Aculeate Hymenoptera new to Pennsylvania and New Jersey.

BY WILLIAM J. FOX.

The following list of Aculeate Hymenoptera may prove of interest to some readers of the NEWS, as it adds a few more species to the fauna of Pennsylvania and New Jersey. The majority of them were collected at Westville, N. J., several miles below Philadelphia, during 1889. The localities in parentheses signify where the species was recorded from before publication of this article.

Mutilla ornativentris Cress. Several specimens, Westville, N. J., 1889 (Southern and Western States).

Mutilla dubitata Sm. Several specimens taken with the preceding species (Florida, Georgia, Colorado).

Mutilla thoracica Blake. One specimen of this small species was captured Oct. 29, 1889 (New York).

Sphærophthalma cypris Blake. This species was moderately common at Westville during the summer of 1889 (Georgia).

Sphærophthalma canadensis Blake. About a dozen specimens were taken in the same locality (Canada).

Tachytes mandibularis Patton. Taken at Westville, N. J., 1889. One specimen (Connecticut).

Philanthus Sanborni Cress. Westville, N. J., August, 1889. One female (Massachusetts).

Crabro trapezoideus Pack. One male, Fairmount Park, Philadelphia, September, 1889 (Illinois).

Thyreopus cingulatus Pack. Westville, N. J., Oct. 29, 1889. One female (Illinois).

Anacrabro occellatus Pack. Three specimens, one male and two females, Westville, N. J., July and August, 1889 (Mass., Ill.).

Vespa occidentalis Cress. One specimen, Fairmount Park, Philadelphia, September, 1889. Flying in company with *V. germanica*, *vidua* and *diabolica* (Nevada, New Mexico).

Nomada texana Cress. Two specimens, both females, Camden, N. J., 1889 (Texas).

Nomada lepida Cress. Three specimens (males), Franklinville, Pa., April 20, 1890. Flying over and alighting on dry sunny paths in the woods (Illinois, Colorado, Texas).

Mellissodes compta Cress. One female of this handsome species taken in Fairmount Park, Philadelphia, Sept., 1889 (Ga.).

Apathus variabilis Cress. Gloucester, N. J., August?, 1889. One specimen (Texas).

All these species were compared with those in the collection of the American Entomological Society, which contains the *types* of nearly all the insects mentioned.

GEOGRAPHICAL VARIATION.

BY HENRY SKINNER, M. D.

Dr. John Hamilton, in a recent paper (Trans. Am. Ent. Soc. vol. xvi, p. 88), gives a list of the Coleoptera common to North America, Northern Asia and Europe, and Mr. Cockerell (Entomologist's Record and Journal of Variation vol. i, No. 1, p. 9) a list of the "American Species of Lepidoptera Representative of European;" also on page 13 of same work, "American Varieties

of British Species (Lepidoptera)." These papers are very interesting and instructive, and suggest many other lines of investigation of a similar character. When the Lepidoptera have been more exhaustively studied after the plan adopted by Dr. Hamilton in the Coleoptera, I have no doubt the results will be interesting, and a number of species now considered distinct more on account of difference of locality than anything else, will be amalgamated.

It has been noted that the Pacific coast fauna more nearly approaches that of Europe than the Eastern, but I do not know that in a species common to both countries a greater similarity has been noticed between the Western specimens and those of Europe than the Eastern. Last Summer I had sent to me a number of chrysalids of *Vanessa antiopa* from San Jose, Cal., and when they disclosed the perfect insects I found them all to be intergrades between the specimens found here (Philadelphia) and those of England and Germany. I had previously noticed that the European *antiopa* could always be distinguished from the American example by the less irrorate character, and usually lighter color of the yellow border of the wings, the former of which is generally most markedly illustrated on the little tail to the inferior wings and the similar projection on the superiors. The European specimens are also usually smaller. The Californian examples are intermediate between the Eastern and European as far as the dark peppering on the border is concerned, and could be readily picked out from the others. I leave it to some one else to point out the significance of the observation. Among the chrysalids there was one, three or four shades lighter in color than the rest, and perhaps also a little larger, which disclosed the rare and interesting variety *hygiæa* Hdrch. (Verz. Eur. Schmett. p. 7, 1851), of which *lintnerii* Fitch (3d Rep. Trans. N. Y. State Agr. Soc. p. 485, 1856) is a synonym. It will be interesting to know whether a very much lighter colored chrysalis is an indication of a coming *hygiæa*. In Mr. Cockerell's list of "American Species Representative of European" he omits *Vanessa Californica* and *V. polychloros*, which are probably one and the same thing. It would be interesting to know whether *Californica* produces anything analogous or the same as the varieties of *polychloros*, *testudo* and *pyromelas* given in Kirby. I do not know of any described variety of the American species. *Grapta faunus* and *G. C-album* are undoubtedly identical, as has been pointed out by Strecker.

To the list of American varieties of British species may be added *P. rapæ*, var. *immaculata* (Can. Ent. July, 1889, p. 128); this makes five in all. I hope that some one will give a list with the bibliography, of the Lepidoptera common to Europe and America, and when a new list of the North American Lepidoptera is prepared the whole geographical range of the species (when found outside of America) will be given.

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ELEMENTARY ENTOMOLOGY.

Second Paper—THE GENERAL STRUCTURE OF INSECTS.

In those papers of this series which treat of the anatomy of Insects in general, we have largely drawn, with the author's permission, from Prof. J. H. Comstock's excellent "Introduction to Entomology."*

Thanks to the kindness of Prof. A. S. Packard, we have also made use of his well-known "Guide"† and his valuable "Entomology for Beginners."‡

As stated in the first paper the body of an Arthropod, and consequently that of an Insect, is made up of a series of rings or *segments*, within which are the vital apparatus and muscles. Confining our attention to insects, it is to be noticed that even young larvæ§ just hatched from the egg show this segmentation of the

* An Introduction to Entomology by John Henry Comstock, Professor of Entomology and General Invertebrate Zöology in Cornell University, and formerly United States Entomologist. With many original illustrations drawn and engraved by Anna Botsford Comstock. Ithaca, N. Y. Published by the author 1888, pp. iv, 234, 201 figures. Price $2.00.

† Guide to the study of Insects and a treatise on those injurious and beneficial to crops for the use of Colleges, Farm-schools and Agriculturists by Alpheus S. Packard, M.D., with fifteen plates and 670 woodcuts; ninth edition. New York, Henry Holt & Co., 1889, 715 pp. (first edition, 1869, Salem)

‡ Entomology for Beginners. For the use of Young Folks, Fruit-growers, Farmers and Gardeners, by A. S. Packard, M.D., Ph. D.; second edition, revised. New York, Henry Holt & Co., 1889, 367 pp. 272 figs.

§ It is hardly necessary to remind the reader that an Insect is an Insect, whether it is an unhatched egg, a growing larva, an apparently lifeless pupa, or a flying or creeping imago. Imagos being so much more conspicuous than the preceding stages, have naturally received both common and scientific names first.

body. If such a young larva be examined* the jointed appearance of the exterior will be seen. The skin of this young larva is quite soft, but becomes harder as the larva grows. This hardening is due to the deposition in the outer layer of the skin (called the *cuticle*) of a horny substance—*chitine*. The chitine is deposited in the cuticle of the different segments, but there is left a narrow space around the body between each segment, in which there is little or no chitine. These narrow rings of unaffected skin divide the segments from each other, and are termed *sutures*. Remaining soft, the sutures permit a freedom of motion of the hard segments upon each other.

In larvæ the sutures are usually wider than in the corresponding imagos. Very often the sutures themselves become hardened by chitine, so that the line of separation between two segments disappears. Such an obliteration of sutures occurs very frequently in the head and fore-parts of imagos, and less frequently in the hind parts.

We have spoken of the segments as hard, but the hard part of any one segment is not a continuous ring. On the contrary, the hard part of a segment consists of several pieces which are more or less free to move upon each other. These pieces are the *sclerites* (from the Greek *skleros*, hard). Some of the soft cuticle remains between the sclerites, and this separating portion also receives the name of *suture*, and like an inter-segmental suture may also become "obsolete" (*i. e.* obliterated).

The skin, originally soft, but now with its cuticle hardened in the segments, the hard part of each segment consisting of several sclerites, forms the *body-wall* of the Insect.

The reader of this series already knows that all an insect's growth is completed in its larval state. As a larva grows quite rapidly, and as chitine is being constantly deposited in the cuticle, the cuticle thus hardened loses its elasticity and is soon too small for the increasing size of the body. Consequently it splits along the middle line of the back, and through this fissure the insect withdraws itself from its chitinous coat. Or, in other cases, the cuticle comes off gradually in thin shreds. The "new skin" contains very little chitine as yet, and being quite elastic, stretches to accommodate the size of the body. This skin (cuticle) in turn

* The student cannot be too strongly reminded that he should compare these papers with some insect, say a grasshopper.

becomes hardened, is likewise cast off, or *moulted*, and succeeded by others, varying in number in different species of insects. Very often there are changes in the shape, color, etc., of the larva after successive moults.

Technical names for the process of moulting are *ecdysis* and *exuviation*, and for the moulted skins, *exuviæ*.

In the case of those insects passing through a complete transformation, when the larva moults for the last time, it becomes a pupa, usually of quite dissimilar shape from the larva, and usually quiet, that is, does not move from place to place. The last moult of the insect's life is when the cuticle of the pupa splits open and the imago emerges, and, after a short period, spreads its wings and begins its ærial life.

Where the insect undergoes but an incomplete transformation, when the nymph moults for the last time, the imago state is entered at once.

Hitherto, in speaking of the segmented form of an insect's body, reference has been made solely to the body-wall. So far as the internal organs are concerned, the muscles, the nervous, circulatory and respiratory systems, at least, are more or less arranged in correspondence with the segmentation of the body-wall. P. P. C.

"SPORTS" IN VENATION.

BY A. B. CORDLEY.

Some time ago while studying the Hymenoptera collected during the seasons of 1888 and 1889, I found three specimens which puzzled me very much. They apparently belonged to the genus *Nomada*, but differed from all the specimens of that genus in our collection in that the anterior wings had but two submarginal cells. I sent one of the specimens for determination to Mr. E. T. Cresson, who replied as follows: "The bee you sent is one of the varieties of *Nomada maculata* Cress., a very variable species. I have seen specimens in which the first transverse cubital nervure was obliterated in one anterior wing, but not in both as in the specimen you sent. Are these nervures absent in both wings in the specimens you have? If so it is both curious and interesting. Such 'sports' occur frequently among the Saw-flies, but rarely among bees." On referring to the specimens retained

I found that the nervure in question was totally obliterated in both anterior wings of both specimens. I also found that both specimens did not belong to the same species, one of them proving to be *Nomada imbricata*. Of the other thirteen specimens of *maculata*, and seven specimens of *imbricata*, taken during the same time, all have the three submarginal cells complete, there being no apparent tendency of the first transverse cubital nervure to become obliterated. I have, also, one specimen of *Colletes* Sp. and one of *Andrena* Sp., which have three submarginal cells to one anterior wing, but only two to the other.

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ON THE HABITS OF SOME MELOINI.

BY H. F. WICKHAM.

Some of our large Western Meloini make striking additions to any cabinet by their bright colors and curious forms. Of these the most beautiful is, in my estimation, *Cysteodemus wislizeni*. This species, with its small head and thorax and immensely inflated elytra which give the hinder part of the body a globular outline, is rather a clumsy object, though its bright blue color more than compensates for any inelegance of form. One who had seen only dead specimens would naturally suppose that it was slow in movement when in fact the exact reverse is the case.

In 1888 I spent a few days at Luna, N. Mex., a nominal station twenty-two miles west of Albuquerque. Near the switch the grass was growing very luxuriantly, and here I had the good fortune to find a colony of this pretty beetle. We arrived in the early morning, and just as I was getting up from the breakfast table in our car, one of the men who had gone out a few minutes before me stuck his head in the door and deposited a "bug" on the floor, which he said he had found running around just outside the car. He looked on it with suspicion, for it had exuded a quantity of yellowish liquid which stuck to our friend's fingers and smelled something like an infusion of all the different vegetables one can think of. I didn't let this prevent me from picking up the "bug," which proved to be the *Cysteodemus* mentioned above, and after a few moments spent in admiration of the brilliant colors, started out to find some more.

I was not yet familiar with its habits, and got only two or three in the few minutes I had to spare before leaving for the scene of

our work through the day, but on coming back about six o'clock P. M., I saw a few more running around. They hold the body high up from the ground and get over the ground at a good rate, looking as if they ran on tiptoe, if we may use such an expression in speaking of insects. I gathered these into the fold, and, as soon as supper was over, a search in the grass disclosed a number of them hanging to the blades a little distance from the ground, apparently feeding, and others taking their evening exercise. Before I left the place I had an opportunity to spend an entire day collecting, and I found that they were all hidden during the middle of the day, but came out to feed or run around in the morning and evening, staying out in the morning until about nine o'clock and coming out again about five o'clock P. M. I never saw this species at any other place, though I looked for it carefully in many different localities. The captures were made early in August.

Another ugly species, from an æsthetic point of view, is *Megetra vittata*, a near ally of our *Cysteodemus*, but with shorter and less inflated wing covers, which do not cover the abdomen. Dried specimens do not give a good idea of the clumsy unwieldliness of the living females of this species, which are so distended with eggs and food, that it seems almost impossible for them to move. They do move, however, though they have not the speed of the preceding species, the abdomen dragging on the ground. The males are more active, and in running lift the body high up like the *Cysteodemus*. The first specimen I saw of *Megetra* was a male, which ran across the platform at Coolidge, N. Mex., July 4, 1888. Next year I looked carefully for the species for nearly a whole day without success, when about four o'clock P. M. I noticed some dark objects in a "greasewood" bush; I went over to investigate, and found a number of these insects feeding on the leaves and others just climbing up the stems. When I counted up the catch I found that I had over forty specimens of both sexes. This was about the 12th of September, and this month is probably their pairing-time, as I took only isolated specimens at other times.

Meloe sublævis is found at the same time, and in company with the two species mentioned, but seems to be rarer, as I found only about a dozen in all. *M. impressus* I took in May at Cheyenne, Wyo., feeding on low plants in the early part of the day. *M. americanus* occurred at Bismarck, Dak., in August, feeding in the middle of the day.

COLLECTING BY LAMPLIGHT.

BY A. S. VAN WINKLE.

(Continued from p. 69, vol. i.)

In order to show the curious connection between the state of the weather and the degree in which moths were attracted to light I will now append the following table, which may prove of great interest to young entomologists, with a view that they may prepare tables in like manner:

DATE.	No. Moths.	REMARKS.
Dec. 13	1	Fine starlight.
14	75	Drizzling and foggy.
15	41	Showers, cloudy.
16	158	(120 species) Steady rain.
17	82	Wet, rather moonlight.
18	9	Fine moonlight.
19	2	Fine, clear.
31	200	(130 species) Dark, windy and heavy rain.
Jan. 1	185	Very wet.
2	68	Cloudy and showers.
3	50	Cloudy and showers.
4	12	Fine.
5	10	Fine.
6	8	Very fine.
7	8	Very fine.
8	10	Fine.
9	36	Showery.
10	30	Showery.
11	260	Heavy rain all night and very dark.
12	56	Showery.
13	44	Showery, some moonlight.
14	4	Fine, moonlight.
15	24	Rain.
16	6	Showers.
17	6	Showers.
18	1	Showers.
Total,	1386	

"Thus it appears that on twenty-six nights I collected 1386 moths, but that more than 800 of them were collected on four very wet and dark nights. My success here led me to hope that, by similar arrangements, I might, in every island, be able to obtain abundance of these insects, but strange to say, during the six succeeding years I was never once able to make any collections at all approaching those at Sarawak."

On reading the above I wished that we had a great many more Wallaces than we do have, *i.e.* if the entomologists of our own country would follow in the footsteps of this great English entomologist the progress of entomology would be much greater. A great many entomologists at present prepare large lists of insects, but probably one in a hundred cites the locality in which the insects are found; a great many on the other hand say North America, which means anywhere between the Atlantic and Pacific coasts, or from the Northern border of Central America to the confines of eternal snow, or just give the separate States. This is a fine state of affairs, is it not? This is also especially exasperating to the student of geographical distribution of insects. The exact locality I think is as of much importance as it is to know what species of plant or plants this or that species of insect feeds on. I hope that hereafter entomologists will pay more attention to the citation of localities. We know what care botanists take when out collecting, they jot down notes of each and every species of plant that they find, of their habits, situation and locality right on the spot. For a very interesting and instructive paper on this subject I would refer the reader to the March number of the "Canadian Entomologist," page 46, where Mr. Cockerell expresses his views.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

In the future all papers received for publication in the News will be printed according to date of reception.

Dr. S. W. WILLISTON, of Yale University, New Haven, Conn., the Dipterologist, has accepted a professorship in the University of Kansas, at Lawrence.

INSECTS NAMED.—1. *Penthe obliquata;* 2. *Melanotus communis;* 3. *Holotrophus bifasciatus;* 4. *Aphorista vittata;* 5. *Aphodius fimetarius;* 6. *Eros aurora.* W. M. HILL, Chester, Pa.

VERY COSTLY INSECTS.—Dr. L. B. Clifton, the well known naturalist, has succeeded in hatching out a rare species of moth, known to entomologists as *Attacus luna*. For a specimen of this moth Dr. Clifton was paid $100 two years ago by the Earl of Roseberry, who is quite an enthusiast in that line. The present specimen is valued at $50.—From the *N. Y. Telegram*.—(More newspaper entomology.)

POLYBIA CUBENSIS IN FLORIDA.—Among some Florida Hymenoptera received from Mrs. A. T. Slosson, of New York, were three specimens, with the nest, of a species of *Polybia*, which, on determination, proved to be *P. cubensis* Sauss. As there is no doubt as to this species being an inhabitant of Florida, I see no reason why it should not be added to the fauna of the United States. Mr. Charles W. Johnson, of the Wagner Institute, Philadelphia, has informed me that he has also taken this species in Florida.—WM. J. FOX.

THAT observant naturalist, Cons. E. L. Layard, writing from New Caledonia, bears witness to the fact of rotten fruit being a very strong attraction to Lepidoptera. He writes: "At this moment I have in my verandah a parrot, which is daily regaled with a portion of banana. Every evening I see a dozen or more of the large Sphingidæ and Noctuæ trying to effect an entrance into the cage to get at the rotting fruit, which is generally invisible from the outside. . . . I always found bananas the best bait to attract the night flyers, but only when they began to rot (*Rhopalocera Malayana*)."—Try it.

OF THE habits of the typical form of *Charaxes athamas* in N. W. India we have a few particulars from Capt. Lang. It is "an insect of extremely rapid flight, flashing like lightning up and down the rocky-bedded streams in the Himalayan glens (3000 to 5000 feet). It pitches on rocks in midstream and flashes off again if approached." Some Lepchas, who, in Sikkim, make what they can by catching insects, and selling them to visitors, take advantage of the known partiality of butterflies for wet sand. Mr. De Nicéville states that "in one place upon a large flattish stone near the middle of the stream the men had put some sand and kept it watered, and it was surprising the number of butterflies that came to their 'trap' and were caught (*Rhopalocera Malayana*)."

WHILE VISITING at Sarver Station, Butler County, Pa., last July, I took quite a number of *Colias philodice*, *Ab. alba*, and among them was a fine, perfect male; this is the first white male that has ever been taken to my knowledge, so this note to the NEWS may prove of some interest to its readers. It is pure white on the upper surface, with a faint yellowish tint on the primaries; the black border, including both pairs of wings, is sprinkled with white scales; underneath it has a smoky appearance, and the submarginal row of orange spots is wanting, both on the primaries and secondaries.*—GEO. A. EHRMAN, Pittsburg, Pa.

* If the genitalia were examined this would probably be found to be a female.

DOLERUS ARVENSIS Say and DOLERUS UNICOLOR Beauv.—These flies have been plentiful in this vicinity for the past ten days or more, and are usually found resting upon dead weeds of all sorts. They have been especially abundant among the branches and in the vicinity of a low spreading bur-oak tree, the buds of which are fairly dripping with a very sweet liquid that has oozed from them as the result of the myriad punctures inflicted by a minute gall-fly, *Neuroterus vernus* Gill. I visited this tree on the 26th of April in company with a student, Mr. H. H. Raymond, who called my attention to the mating of the black saw-fly with *D. arvensis*. A few moments later we both saw two more of these two species pair, and a day later we each saw the same thing repeated. The males in every case were *D. unicolor*, and the females *D. arvensis*. I had previously noticed that of about forty specimens of each of these species in my collection all of the former were males and all of the latter were females. Say also notes the fact that only the male of *unicolor* and the female of *arvensis* are known. These facts with the above observations put it beyond a doubt that these two saw-flies are male and female of the same species. As *unicolor* Beauv. was first described (1805), this name will hold for the species, and *arvensis* Say will have to fall to the rank of a synonym. While mating the male and female face in opposite directions, and the wings and abdomen of the male are covered by the wings of the female. The union lasts but three or four seconds.

C. P. GILLETTE.

EXCURSION.—The committee from the Brooklyn, Newark and Philadelphia Societies have decided upon Upper Jamesburg, N. J., as the place where the field-meeting of the entomologists of the three cities and neighboring points is to take place on the 4th of July next. Jamesburg is on the Amboy Division of the Pennsylvania Railroad, and may be reached from New York *via* Perth Amboy and Rahway at 9.10 a. m., Newark at 9.36 a. m.; *via* Monmouth Junction, New York, 7.20 a. m., Newark 7.50 a. m. Leave Philadelphia from Broad Street Station at 6.50 a. m., *via* Camden, at 7.10 a. m. The 7.20 a. m. from New York *via* Monmouth Junction, meets the 6.50 from Philadelphia at Monmouth Junction, and this train is recommended, as it will bring the party into Jamesburg at the same time. Excursion fare about $2.10 from New York and Philadelphia. All the entomologists desiring to attend will be heartily welcomed, whether members of the societies organizing the excursion or not, but in order that the necessary arrangements for creature comforts can be made, all those expecting to take part in the field-meeting will please notify one of the members of the committee as soon as convenient. Further information can be obtained from the committee:

Dr. D. M. Castle, 2007 Arch Street, Philadelphia.
C. P. Machesney, 65 Broadway, N. Y.
C. H. Roberts, 235 W. 122d Street, N. Y.
J. B. Smith, Rutgers College, New Brunswick, N. J.
H. W. Wenzel, 1115 Moore Street, Philadelphia.

Entomological Literature.

NATURE, February, '90.—Notes on Dr. A. R. Wallace's "Darwinism," by T. D. A. Cockerell (an interesting paper, largely entomological).

ENTOMOLOGISCHE NACHRICHTEN, xvi, No. 6, March, 1890.—"The Genera and Species of Cryptinæ revised and tabulated I," O. Schmiedeknecht.

ANALES DE LA SOCIEDAD CIENTIFICA, xxix.—Systematic and synonymic enumeration of the Argentine, Chilian and Uruguayan Formicidæ, Dr. C. Berg.

REVUE BIOLOGIQUE DU NORD DE LA FRANCE, 2e Année, No. 7, April, 1890.—"Acarines and Marine Insects of the sides of the Boulonnais (continued)," R. Moniez.

LE NATURLISTE CANADIEN, April, 1890.—Continuation of the Hemiptera-Homoptera of the Province of Quebec, contains the following new species, *Pemphigus alni*.

ATTI DEL REALE ISTITUTO VENETO DI SCIENZE, LETTERE ED ARTI (November, 1888—October, 1889), Tomo vii, "View of the Itallan Acarofauna," G. Canestrini, with four plates.

OVERSIGT OVER DET KONGELIGE DANSKE VIDENSKABERNES SELSKABS (Copenhagen). Bulletin for 1889, No. 2.—"Contribution to the anatomy of the Ant-lions," by Fr. Meinert, with two plates.

COMPT. RENDU. SOCIETE ENTOMOLOGIQUE DE BELGIQUE, 1 Mars, 1890.—"Heterocera Exotica, new genus and species from the Dutch East Indies (continued)," by J. M. Heylaerts; *Squamura* n. g.

NATURWISSENSCHAFTLICHE WOCHENSCHRIFT (Berlin) for Mar. 2, 1890, contains an article on swarms of "Butterflies in the South Atlantic Ocean remote from the land," off the Argentine coast, in February, 1887.

THE ZEITSCHRIFT FUR WISSENSCHAFTLICHE ZOOLOGIE, vol. xlix, heft 3, contains "Researches on the first embryological phenomena in the eggs of Insects—I. The egg of *Pieris brassica*," H. Henking, with three plates.

LE NATURLISTE CANADIEN for February, 1890.—Continuation of the notes on Hemiptera—Homoptera of Quebec (fams. Jassidæ and Psyllidæ); a new species of *Erythroneura* (*E. mali*) and one of *Idiocerus* (*I. Duzeei*) are described.

LE NATURLISTE CANADIEN, March, 1890.—"Hemiptera-Homoptera of the Province of Quebec (continued)," fams. Psyllidæ and Aphidæ; includes the following new species: *Psylla recticeps*, *Diraphia 4-cornis*, *D. sanguinea*, *Livia saltatrix*, *L. bifasciata*.

PROCEEDINGS OF THE CALIFORNIA ACADEMY OF SCIENCES II, 1889.—Entomological Communications, Dr. H. H. Behr; genus *Neophasia* Behr = *Eucheira* Westw., with three species, *socialis* Westw., *Terlootii* Behr, *menapia* Feld.; *Dryocampa Riversii* n. sp., Cal.

MEMOIRES DE LA SOCIETE DE PHYSIQUE ET D'HISTOIRE NATURELLE DE GENEVE, XXX, No. 6.—New or little-known Locustidæ, A. Pictet; contains many new genera and species, including the following from North America, *Idiostatus* n. g., *I. californicus*, figured.

ZOOLOGISCHER ANZEIGER, xiii, No. 329, 10 Mar. 1890.—"Butterflies' wings and the Imaginal disk of the same," and "Gland-system of the Skin in Bombycidæ (silk-spinners), by E. Verson. No. 330, 17 Mar., '90. "On the Embryology of *Blatta germanica*" by N. Cholodkovsky.

WE have lately received Vol. i, No. 1, of the Entomologist's Record and Journal of Variation, edited by J. W. Tutt. This fills a very important gap in entomological literature, and is both interesting and useful from a scientific standpoint. We wish it all success and a long life.

IN THE COMPTES-RENDUS DES SEANCES DE LA SOCIETE ENTOMOLOGIQUE DE BELGIQUE for Feb. 1, 1890.—A Forel has a note on "A parasite of *Myrmecia forficatá* Fabr." The parasite is also a hymenopter, *Eucharis myrmeciæ* P. Cam., whose nymphs were found in chrysalids of the *Myrmecia* from South Australia.

ENTOMOLOGISCHE NACHRICHTEN, xvi, 4, February, 1890.—New Histeridæ, J. Schmidt; includes one North American species, *Saprinus sulcatulus*, from California. Orthopterological communications, Dr. F. Karsch; on *Phaneroptera* from Asia and Africa; two new genera are formed, *Ceratopompa* and *Tetraconcha*.

FROM PROF. C. BERG we have received a copy of his "Quadraginta Coleoptera Nova Argentino (from Ann. Univer. Buenos Aires, vi, 1889)." The forty new species from the Argentine Republic here described are of the families Cerambycidæ, Meloidæ, Mordellidæ, Cistelidæ, Tenebrionidæ, Malacodermata and Buprestidæ.

MEMOIRS OF THE MUSEUM OF COMPARATIVE ZOOLOGY AT HARVARD COLLEGE, Vol. xvii, No. 1, is Mr. L. Cabot's.—"The Immature State of the Odonata, Part III.—Subfamily Cordulina," with six plates. The nymphs of twenty-four species of *Cordulina* and eleven species of *Pantala* and *Tramea*, are described and figured excellently.

WE have received from M. Ernest Olivier his excellent Catalogue of the Coleoptera of the Department of the Allier, France, forming Part I of Volume II, of "Faune de l'Allier," published at Moulins, 1890. Faunal lists of restricted areas are always of value as supplying data for geographical distribution, and such is M. Olivier's work, which fills 375 pages, and is provided with a valuable index—table of genera.

ABHANDLUNGEN [DES] SENCKENBERGISCHEN NATURFORSCHENDEN GESELLSCHAFT (Frankfurt a. M.), xvi, heft 1, '90.—"The Lepidopterous Fauna of the Island of Porto Rico," H. B. Möschler, 1 plate; contains numerous new genera and new species. This is a very useful and important paper, as it gives a complete list of the species of the island, both macro and micro, with all the references (pp. 290).

MEMORIE DELLA R. ACCADEMIA DELLE SCIENZE DELL' ISTITUTO DI BOLOGNA, Serie iv. Tomo ix, 1888.—"On the Figure and Structure of the Facets of the Cornea and on the Refractive Medium of the Compound Eyes of the Muscidæ," G. V. Ciaccio, 1 plate. "Anatomical Composition of the Nerves and their mode of termination in the muscles of the Grasshopper (*Oediopoda fasciata* Siebold), V. Mazzoni, one plate.

ICONES ORNITHOPTERORUM.—A monograph of the Rhopalocerous genus Ornithoptera, or Bird-wing Butterflies by Robert H. F. Rippon; Part 1. To be completed in twenty parts, with a map and nearly eighty plates; Part 1 contains four plates, giving colored figures and the neuration of *O. urvilliana*, *hippolytus* and *cræsus*. The text is very exhaustive. If the remaining parts are in the same style as the first, the above will be a grand work.

THE FOSSIL BUTTERFLIES OF FLORISSANT, Samuel H. Scudder.—This is an extract from the eighth annual report of the Director of the Department of the Interior, 35 pp. 2 plates. The following new genera are described: *Jupiteria*, *Lithopsyche*, *Nymphalites*, *Apanthesis*, *Prolibythea* and *Stolopsyche*. The new species are *Jupiteria charon*, *Lithopsyche styx*, *Nymphalites obscurum*, *Apanthesis leuce*, *Prolibythea vagabunda* and *Stolopsyche libytheoides*.

THE YOUNG NATURALIST, January, 1890 (London).—The Origin and Loss of the Wings of Insects, Linnaeus Greening. The Pterophorina of Britain, J. W. Tutt. Same for February, 1890. The Pterophorina of Britain (continued). Notes on the possible advantages of melanic variations to Lepidoptera, Lord Walsingham. The Origin and Loss of Wings of Insects, Linnaeus Greening. Curious Visitors at Sugar, G. Pullen. Retarded Emergence, John E. Robson.

TRANSACTIONS ENTOMOLOGICAL SOCIETY OF LONDON, Part I, 1890, with six plates. On the phylogenetic significance of the wing-markings in certain genera of the Nymphalidæ, Frederick A. Dixey. Systematic temperature experiments on some Lepidoptera in all their stages, Frederic Merrifield. This paper and the accompanying plates are of great interest, as they show one of the causes of variation in a species, and also teach an important lesson to those who are too hasty in describing new species of Lepidoptera.

ANNALEN DES K. K. NATURHISTORISCHEN HOFMUSEUMS (Wien), Bd. iv, No. 4, 1889.—The Hymenopterous Group of the Evaniidæ, monographically treated," by A. Schletterer, 3d Abtheilung, with four plates;

numerous new species are described from all parts of the world, including five species of *Gasteruption* from North America, Bd. v, No. 1, 1890. "[Contribution] to the knowledge of the *Pemphredons*," by F. F. Kohl, including, besides other new species, three from North America of the genera *Cemonus*, *Ammoplanus?* and *Stigmus*.

HORÆ SOCIETATIS ENTOMOLOGICÆ ROSSICÆ, xxiii, 1890, contains papers on Russian and Asiatic insects, including new species of Heteroptera, Hymenoptera, Coleoptera and Lepidoptera; Revision of the copulatory armature of the males of the Chrysides, Gen. Radoszowski; On the anatomy of *Sesia apiformis* and *tipuliformis*, E. Brandt; Anatomy of *Vermipsylla alacurt*, J. Wagner; Revision of the European species of the genus *Phronia* Winnertz, with the descriptions of two new genera, *Macrobrachius* and *Megophthalmidia*, H. Driedzicki, etc.

BIOLOGIA CENTRALI-AMERICANA; Part lxxxii, Feb., 1890.—Arachnida-Araneidea O. P. Cambridge, pp. 57—64, pl. 6; Coleoptera, vol. 2, pt. 1, D. Sharp, pp. 305—312, vol. 3, pt. 1, C. O. Waterhouse, pl. 9, vol. 6, pt. 1, supplement, M. Jacoby, pp. 169—176. Lepidoptera-Heterocera, vol. 1, H. Druce, pp. 369—384, pl. 32. Diptera, vol. 2, F. M. van der Wulp, pp. 57—88; Part lxxxiv, Arachnida-Acaridea, Otto Stoll, pp. 17—24, pls. 12—14. Coleoptera, vol. 2, pt. 1, D. Sharp, pp. 313—336, vol. 7, H. S. Gorham, pp. 129—144, pl. 7. Hymenoptera, vol. 2, P. Cameron, pp. 65—80, pl. 5. Lepidoptera-Heterocera, vol. 1, H. Druce, pp. 385—392. Rhynchota-Heteroptera, W. L. Distant, pp. 329—336. Diptera, vol. 2, F. M. van der Wulp, pp. 89—112.

BERLINER ENTOMOLOGISCHE ZEITSCHRIFT, xxxiii, 2 heft.—The Hymenopterous genera *Stenophasmus* Sm., *Monomachus* Westw., *Pelecinus* Latr. and *Megalyra* Westw., monographically treated," A. Schletterer. "Contribution to the knowledge of the Ascalaphidæ of Madagascar," Dr. F. Karsch;* *Balanopteryx*, *Amæridops* n. g. "On a new East-African genus of Libellulidæ, separated for *Idionyx luctifera* Selys,"* Dr. F. Karsch, *Schizonyx*, also *Dicranopyga*, n. g." "New Histeridæ from Paraguay," J. Schmidt; *Hesperodromus*, *Discoscelis*, *Colonides*, *Termitoxenus*, n. g. "Contributions to the knowledge of the species and genera of Libellulina,"* Dr. F. Karsch; *Paltothemis*, *Potamarcha*, *Corduliops*, *Helothemis*, *Malamarptis*, *Oligoclada*, *Micromacromia*, *Allorhizucha* n. g. "Three new Tenebrionidæ from Tripoli,"* G. Quedenfeldt; *Pachylodera* n. g.

LES INSECTES VESICANTS.—H. Beauregard, Paris, 1890. A large octavo volume of nearly 600 pages with many illustrations in the text and large lithographic plates of anatomical and microscopical details. It is divided into four parts, the first is anatomical, second the physiology and pharmacology, with special researches on the seat of the vesicating property, the third is devoted to classification, the fourth a catalogue of all species de-

* Contains new species other than North American.

scribed to date. A new classification is adopted, based on the habits of the secondary larva, which does not differ materially from that already in vogue, based on the characters of the insects themselves. Some of our genera were unknown to the author, and a good number fairly well misunderstood. While the work will be useful for reference as a compendium it will hardly become a standard in classification.—G. H. H.

VERHANDLUNGEN DER K. K. ZOOLOGISCH-BOTANISCH GESELLSCHAFT IN WIEN, Bd. xxxix, Heft 3.—"Contributions to the knowledge of the chilopods," B. Schaufler, with one plate and four zincographs, treating of the male and female genital organs. "Arachnidæ Transcaspicæ," E. Simon, describing new species and three new genera, *Attulus* (fam. Attidæ), *Scylax* (fam. Drassidæ) and *Phyxioschema* (fam. Avicularidæ), Heft 4 (same Band). "Determination-table of the Trichopterygidæ of the European faunal district," by C. Flach, with five plates and one zincograph; the table is arranged both for genera and species, and includes six new species. "Fourth Contribution to the Dipterous Fauna of Tyrol," E. Pokorny, including new species of various genera of the families Bibionidæ, Anthomyzinæ and Helomyzinæ, and establishing two new genera, *Chiastocheta* (fam. Anthomyzinæ), type *Aricia trollii* Ztt., and *Steringomyia* (fam. Sarcophaginæ), type *S. stylifera* n. sp.

NORTH AMERICAN LEPIDOPTERA. REVISED CHECK-LIST OF THE N. AMERICAN NOCTUIDÆ by A. Radcliffe Grote, A. M., Part I. Thyatirinæ—Noctuinæ. Bremen, 1890. Printed by Homeyer & Meyer, Rutenhof, pp. 52. Preface and Index.—This list, Mr. Grote states, is to supersede or take the place of the list of 1875–76, and like the latter the new list simply enumerates the species and proposes a number of new generic terms without description. "So far as I am concerned it closes my thirty years' work in the North American Owlet moths and represents my present comprehension of the natural classification of the family."* Mr. Grote separates the usual small aggregation as Thyatirinæ, and places all the rest of the genera into the Noctuinæ, dividing them tribally. The Bombycoidi head the list with three genera. In this tribe and in the preceding subfamily species described by Dr. Strecker, Mr. Edwards and myself, even as far back as 1876; have been omitted.

The Apatelini contain fourteen genera. The Agrotini contain eleven; about fifty species of *Agrotis* described by myself are omitted. In suggesting that the species of *Agrotis* need re-arrangement, a series of characters is given with a show of originality, although they had been used by European authors thirty years ago. Mr. Grote is comfortably unaware that over one hundred species of what he calls *Agrotis* are structurally absolutely identical with the two species which he separates as *Carneades*.

The Dicopini follow, with four genera.

The Hadenini contain forty-four genera, and in this tribe are contained

* See Proc. Am. Phil. Soc. xxi, 143, 1887, for almost identical language.

the typical Owlets. The species and genera referable here, described by me in 1887 are omitted, and my Revisions of *Oncocnemis*, *Oligia* and *Pseudanarta*, are apparently unknown to the author.

The Arzamini have two genera, the Nonagriini eight, the Scolocampini six, and *Nolophana* has a little tribe all by itself. Six genera constitute the Caradrini, while the Orthosiini contain thirty-three genera, among them *Tæniocampa*, *Glæa* and *Orthosia*. As usual, my genera and species are omitted, even those described in 1887. My recent Revision of Tæniocampinæ Proc. U. S. Nat. Mus. 1889, pp. 455–496, places the species and genera into a more natural grouping.

The Calocampini have three genera, *Cleophana* and *Cucullia* each form a tribe, the Eutelini have three genera, the Anomiini five, while *Litoprosopus* again forms a singular tribe.

The Plusiini have six, the Calpini four, and the Stiriini eight genera.

In the Heliothini Mr. Grote proposes a few more generic names, and adds *Lepipolys*, *Anarta*, *Cirrhophanus* and *Annaphila* to the tribe.

The Tarachini contain three genera, and *Cerathosia* is placed here and elevated to the tribal rank. Mr. Grote again goes over my supposed blunders and does not seem to know my paper in which the venation is figured. I have explained how the obliteration of vein 5 of secondaries by the Canada balsam caused my mistake. Mr. Grote affects to discredit this explanation, which all, who have ever mounted bleached wings, can easily substantiate. Knowing the danger as I did, I should have been more careful; but, as it is the only mistake of mine Mr. Grote ever discovered, he will no doubt continue to harp on it. The Eustrotiinæ contain all the remaining genera save *Hyblæa*, which forms a tribe. The remainder of the pamphlet is taken up with generalities and criticisms, in which Messrs. Riley, Hulst and myself fare ill. In his characterization of the Noctuidæ Mr. Grote says: "the front pair [of tibiæ] rarely with an epiphysis." I know of no species in which this organ is wanting. It is scarcely worth while noticing the vagaries of these ten pages, winding up with "But I have no longer time to indulge in philosophy or sentiment. Already I hear the roaring of the lions from those heights where Dr. C. V. Riley and Professor J. B. Smith browse together upon Government pastures" !!!

This is pathetic, undoubtedly, and characterizes the list, which is fully five years behind the time, and is as remarkable for what it lacks as for what it contains.—JOHN B. SMITH.

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